

Appl. No: 09/730,813

Reply to Office Action of January 27, 2003

REMARKS

The final Office Action was issued on pending claims 1-19. In the Office Action, claims 2, 3 and 13-18 stand withdrawn from consideration, and claims 1, 4-12 and 19 stand rejected. In this Response, claims 1 and 19 have been amended, claim 4 has been cancelled without prejudice, and no claims have been added. Thus, claims 1, 5-12 and 19 are pending and under consideration.

Applicants invite the Examiner to call Applicants' Representative to discuss any issues with this application.

Rejection of Claim 1 – 35 U.S.C. § 102(a)

At pages 2 and 3 of the Office Action, claim 1 was rejected under 35 U.S.C. § 102(a) as being anticipated by Tabuchi et al. (JP 2000-273645-A). Applicants respectfully disagree.

Applicants respectfully submit that Tabuchi et al. is not prior art to the present application. This application claims foreign priority based on three Japanese patent applications, patent application number 11-347108 filed on December 7, 1999, patent application number 2000-37482 filed on February 16, 2000 and patent application number 2000-66106 filed on March 10, 2000. A certified copy of all three Japanese priority documents was submitted to the Patent Office on March 9, 2001 in a Submission of Priority Documents. Applicants properly claimed foreign priority based on the three Japanese applications in the Declaration and Power of Attorney signed by Applicants and in the Submission of Priority Documents. English language translations of the three Japanese priority documents are being prepared and will be submitted to the Patent Office. Accordingly, Applicants will be entitled to rely on the Japanese filing dates of December 7, 1999, February 16, 2000 and March 10, 2000 upon submission of the English language translations under 37 C.F.R. § 1.55.

Conversely, the publication date of Tabuchi et al. is October 3, 2000. All three Japanese priority dates for Applicants' present application predate the Tabuchi et al. publication date. Thus, Tabuchi et al. is not prior art to Applicants' present application.

Applicants respectfully apologize for not raising this point in the previous Response to Office Action submitted December 26, 2002.

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Thus, Applicants respectfully submit that the § 102 rejection of claim 1 has been overcome.

Rejection of Claims 1 and 4 – 35 U.S.C. § 102(e)

At pages 3 and 4 of the Office Action, claims 1 and 4 were rejected under 35 U.S.C. § 102(e) as being anticipated by Takahashi et al. (US 6,192,828 B1). Applicants respectfully disagree.

Claim 1 pertains to a surface treatment apparatus for making raw material gas plasma. Claim 1 has been amended to further clarify the claim and claim 4 has been cancelled without prejudice in view of the amendment to claim 1. Claim 1 now calls for “an opening width $W(1)$ of the smallest portion of the plasma nozzles is set in a range satisfying $W(1) \leq 20X$, where X is a thickness of a sheath layer generated under the desired plasma generation conditions.”

Fig. 1 shows an example of Applicants' claimed surface treatment apparatus. The surface treatment apparatus 1 has a plasma nozzle 7. The plasma nozzle 7 has an opening width $W(1)$ of the smallest portion on the plasma nozzle 7 which is set in a range satisfying $W(1) \leq 20X$ in which X is a thickness of a sheath layer generated under the desired plasma generation conditions. See the specification at page 34, lines 5-24. Applicants' claimed invention provides advantages. For example, hollow glow discharge can be generated efficiently at the plasma nozzle when the plasma nozzle has an opening width $W(1) \leq 20X$, where X is a thickness of a sheath layer generated under the desired plasma conditions. See the specification at page 17, lines 2-5.

Turning to Takahashi et al., Takahashi et al. does not disclose or suggest the claimed feature of a plasma nozzle having an opening width $W(1)$ of the smallest portion on the plasma nozzle set in a range satisfying $W(1) \leq 20X$, where X is a thickness of a sheath layer generated under the desired plasma generation conditions. Indeed, the Office Action does not assert that Takahashi et al. discloses or suggests such a feature.

Thus, Applicants respectfully submit that the § 102 rejection of claims 1 and 4 has been overcome.

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Rejection of Claims 4-12 - 35 U.S.C. § 103(a)

At pages 5 and 6 of the Office Action, claims 4-12 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Tabuchi et al. Applicants respectfully disagree. As discussed above, Tabuchi et al. is not prior art to the present application. Thus, Applicants respectfully submit that the § 103(a) rejection of claims 4-12 has been overcome.

Rejection of Claim 19 - 35 U.S.C. § 103(a)

At page 6 of the Office Action, claim 19 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Tabuchi et al. in view of Hartig et al. (US 5,683,584). Applicants respectfully disagree. As discussed above, Tabuchi et al. is not prior art to the present application. Thus, Applicants respectfully submit that the § 103(a) rejection of claim 19 has been overcome.

Rejection of Claims 5-12 - 35 U.S.C. § 103(a)

At pages 6 and 7 of the Office Action, claims 5-12 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Takahashi et al. Applicants respectfully disagree. As discussed above, Takahashi et al. does not disclose or suggest a plasma nozzle having a smallest portion set in a range satisfying $W(1) \leq 20X$ in which X is a thickness of a sheath layer generated under the desired plasma generation conditions. The Office Action does not assert that Takahashi et al. discloses or suggests such features. Accordingly, claims 5-12 are allowable over Takahashi et al.

Furthermore, claims 5-12 depend from claim 1 which is allowable over Takahashi et al. Accordingly, claims 5-12 are allowable because of their dependency from claim 1.

Thus, Applicants respectfully submit that the § 103(a) rejection of claims 5-12 has been overcome.

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Rejection of Claim 19 - 35 U.S.C. § 103(a)

At page 7 of the Office Action, claim 19 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Takahashi et al. in view of Hartig et al. Applicants respectfully disagree. As discussed above, Takahashi et al. does not disclose or suggest a plasma nozzle having a smallest portion set in a range satisfying $W(1) \leq 20X$ in which X is a thickness of a sheath layer generated under the desired plasma generation conditions. The Office Action does not assert that Takahashi et al. discloses or suggests such features. Accordingly, claim 19 are allowable over Takahashi et al.

Furthermore, claim 19 depends from claim 1 which is allowable over Takahashi et al. Accordingly, claim 19 is allowable because of its dependency from claim 1.

Thus, Applicants respectfully submit that the § 103(a) rejection of claim 19 has been overcome.

CONCLUSION

For the foregoing reasons, Applicants submit that the patent application is in condition for allowance and request a Notice of Allowance be issued.

Respectfully submitted,

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